CMPE 443 PRINCIPLES OF EMBEDDED SYSTEMS DESIGN

LAB #001 “Setup STM32 NUCLEO-L552ZE-Q”

1) Setup Environment

You will install softwares which are STM32CubeIDE and STM32CubeMonitor. You can download the installers from:

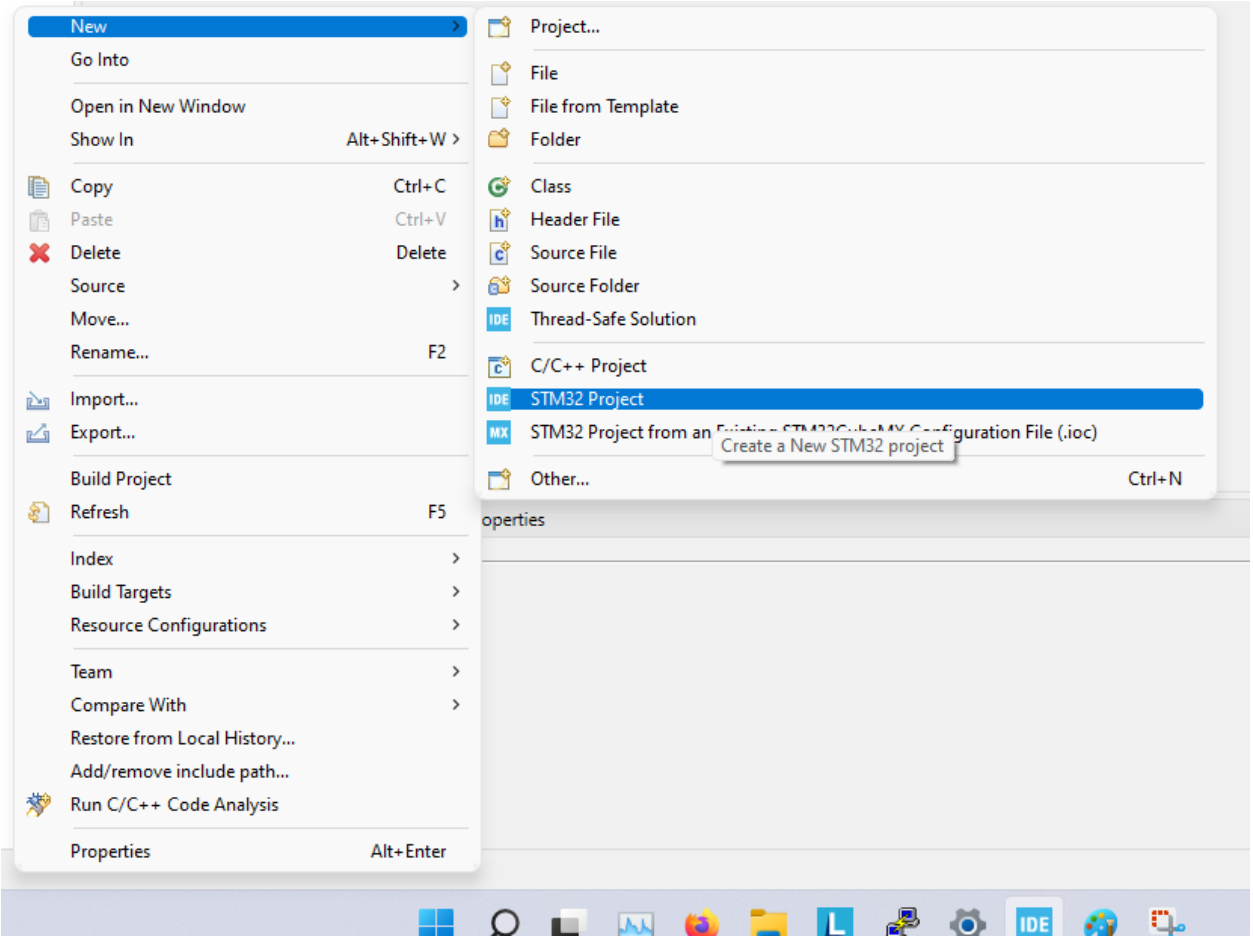
https://www.st.com/en/development-tools/stm32cubeide.html

https://www.st.com/en/development-tools/stm32cubemonitor.html

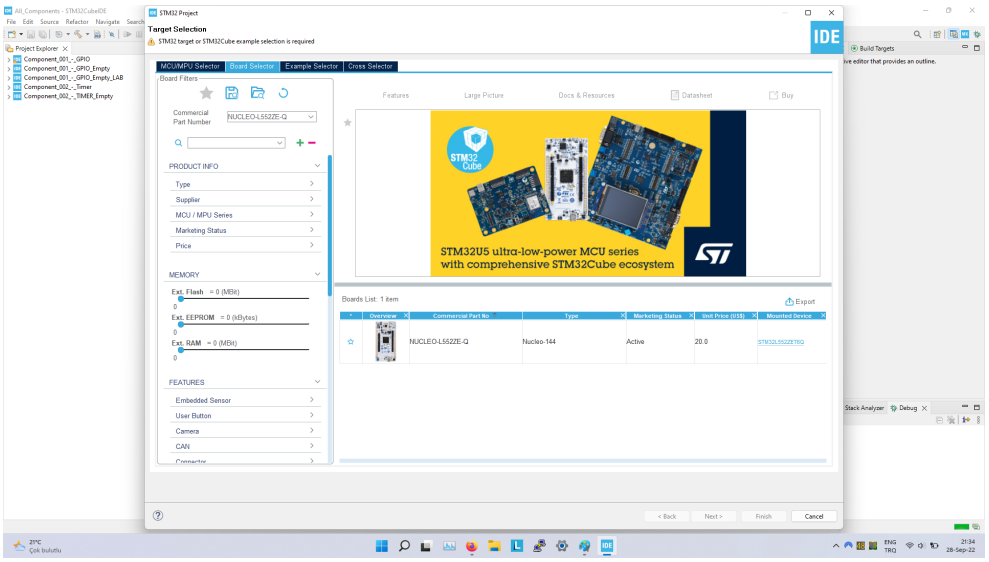
2) STM32CubeIDE Setup Project

In this prelab, you will not have the board, but still you can create a new project for STM32 NUCLEO-L552ZE-Q board.

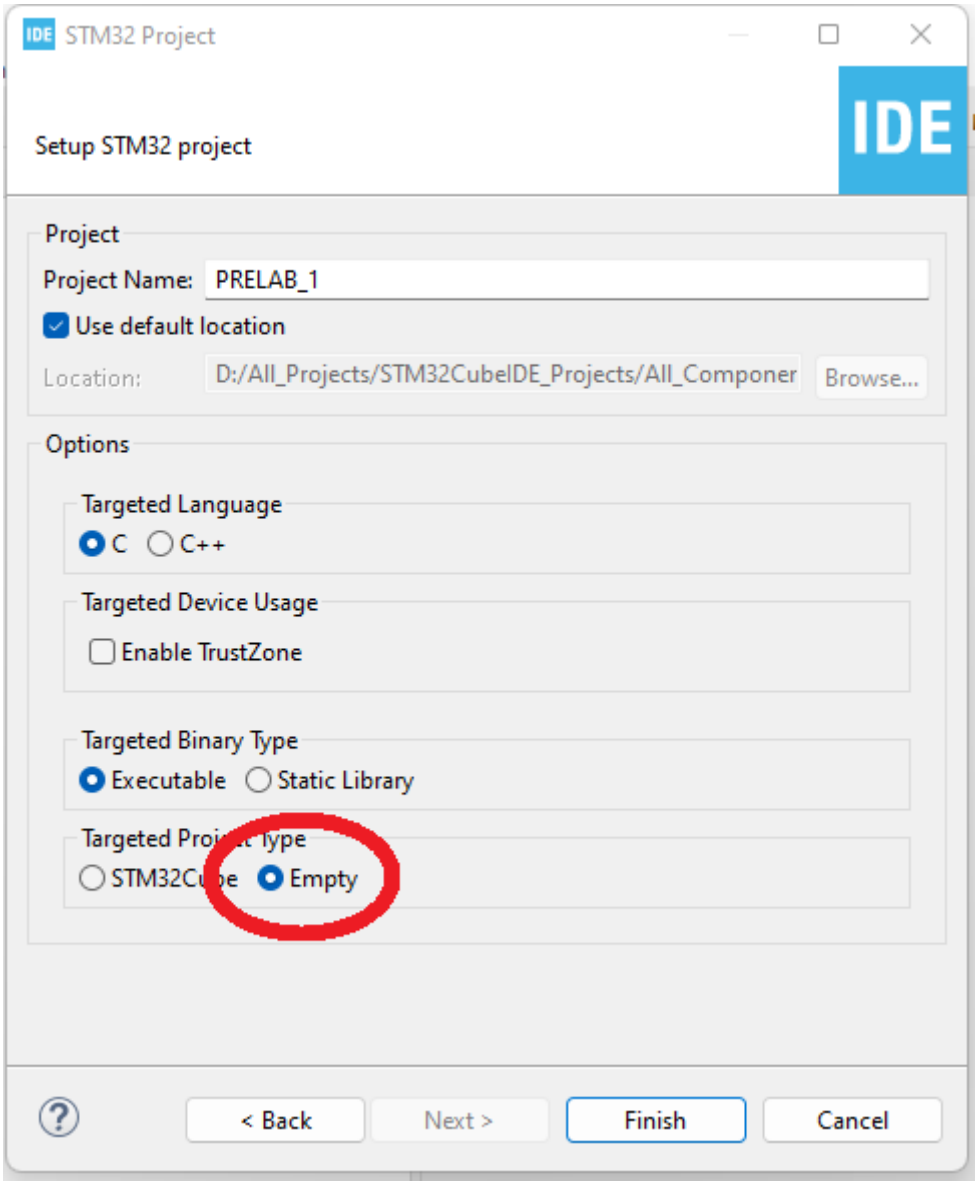
- Create New STM32 Project



- From the Board Selector, select NUCLEO-L552ZE-Q.



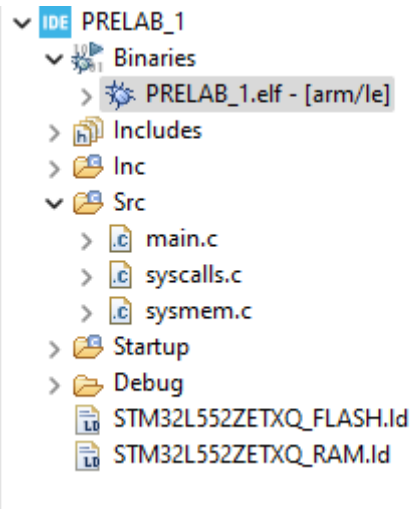
- Make sure it is an empty project.



- You will change the code which is in the main.c file with this code. You can download the main.c file from moodle.

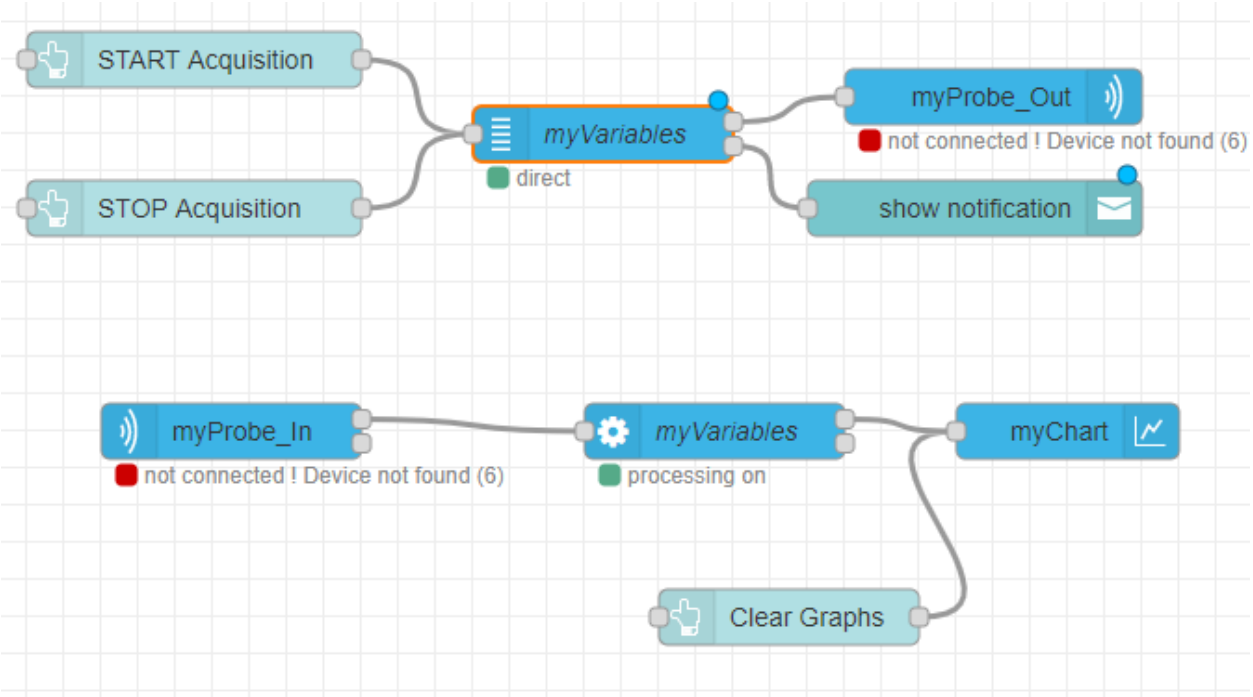
```c
#include <stdint.h>

#define wait_milisecond 1000
uint32_t wait_counter = 0;

int main(void) {
    *((uint32_t*)(0x40021000 + 0x4C)) |= 0x01;

    *((uint32_t*)(0x42020000 + 0x08)) &= ~(0x03 << (9 * 2));
    *((uint32_t*)(0x42020000 + 0x08)) |= (0x01 << (9 * 2));

    *((uint32_t*)(0x42020000 + 0x04)) &= ~(0x01 << 9);

    *((uint32_t*)(0x42020000 + 0x0C)) &= ~(0x03 << (9 * 2));

    *((uint32_t*)(0x42020000 + 0x00)) &= ~(0x03 << (9 * 2));
    *((uint32_t*)(0x42020000 + 0x00)) |= (0x01 << (9 * 2));

    *((uint32_t*)(0x42020000 + 0x18)) |= (0x01 << 9);

    while(1) {
        int index;

        *((uint32_t*)(0x42020000 + 0x18)) |= (0x01 << 9);

        for(index=0;index<wait_milisecond*333;index++);
        wait_counter = wait_counter + 1;

        *((uint32_t*)(0x42020000 + 0x18)) |= ((0x01 << 9) << 16);

        for(index=0;index<wait_milisecond*333;index++);
        wait_counter = wait_counter + 1;
    }
}
```

- You will build the project and after the building an .elf file be created. ()

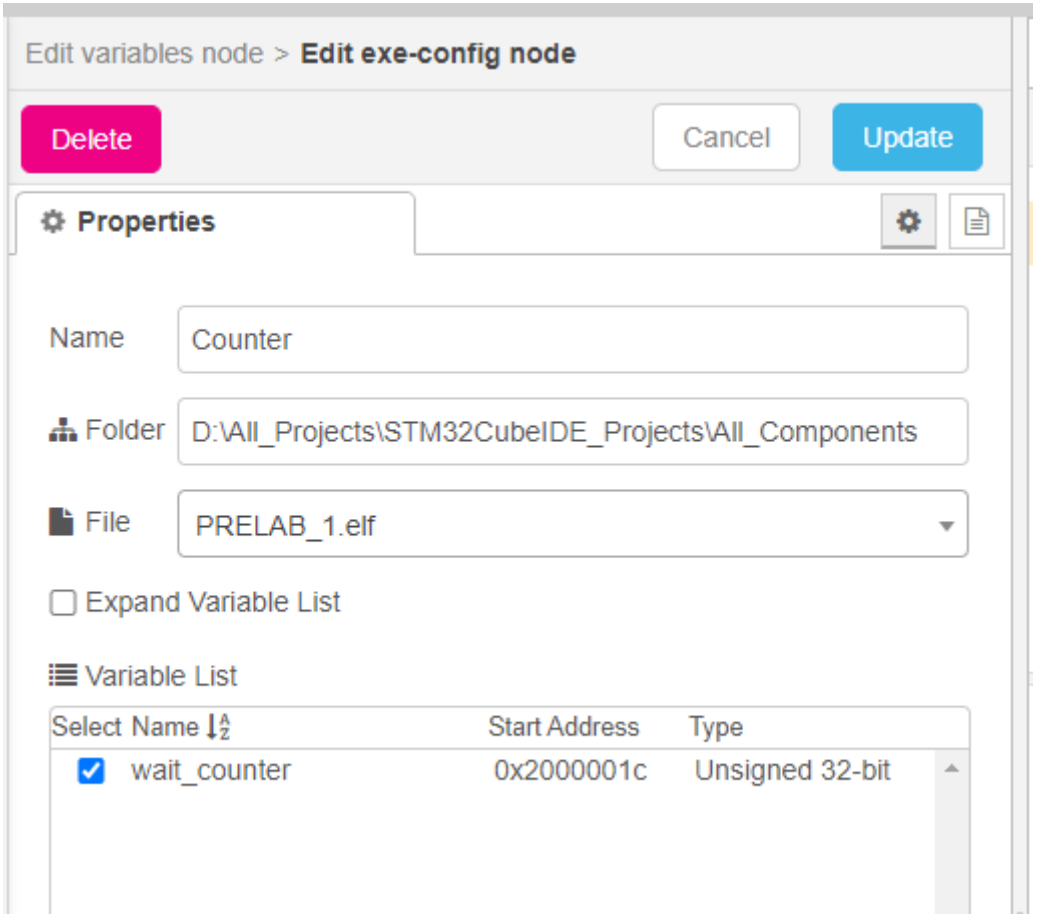


3) STM32CubeMonitor Setup

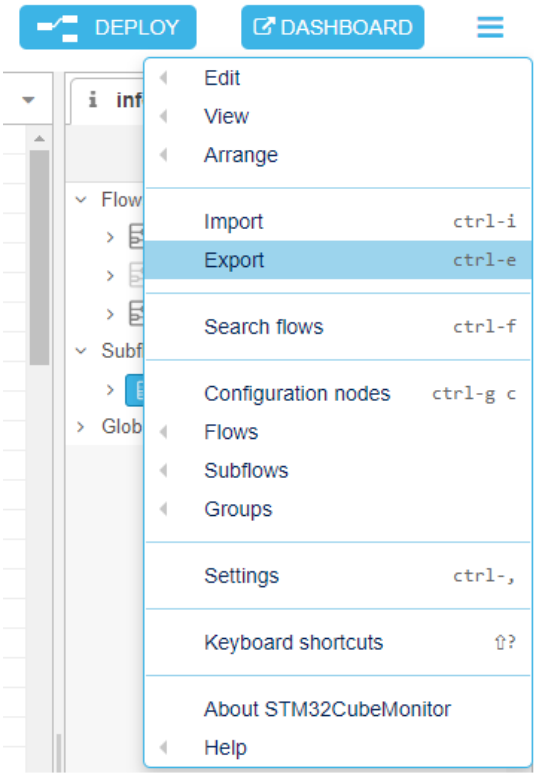
- When you open the program, it will start with a basic flow. You can use that flow for the prelab.



- Open myVariables node and edit the Executable. You will see the Edit exe-config node window. You should select the folder where the .elf file is and then you should select the .elf file.



- You do not have the board so you cannot make the additional configurations and run the monitor.You can export the flow with these configurations via the Download button.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DASHBOARD
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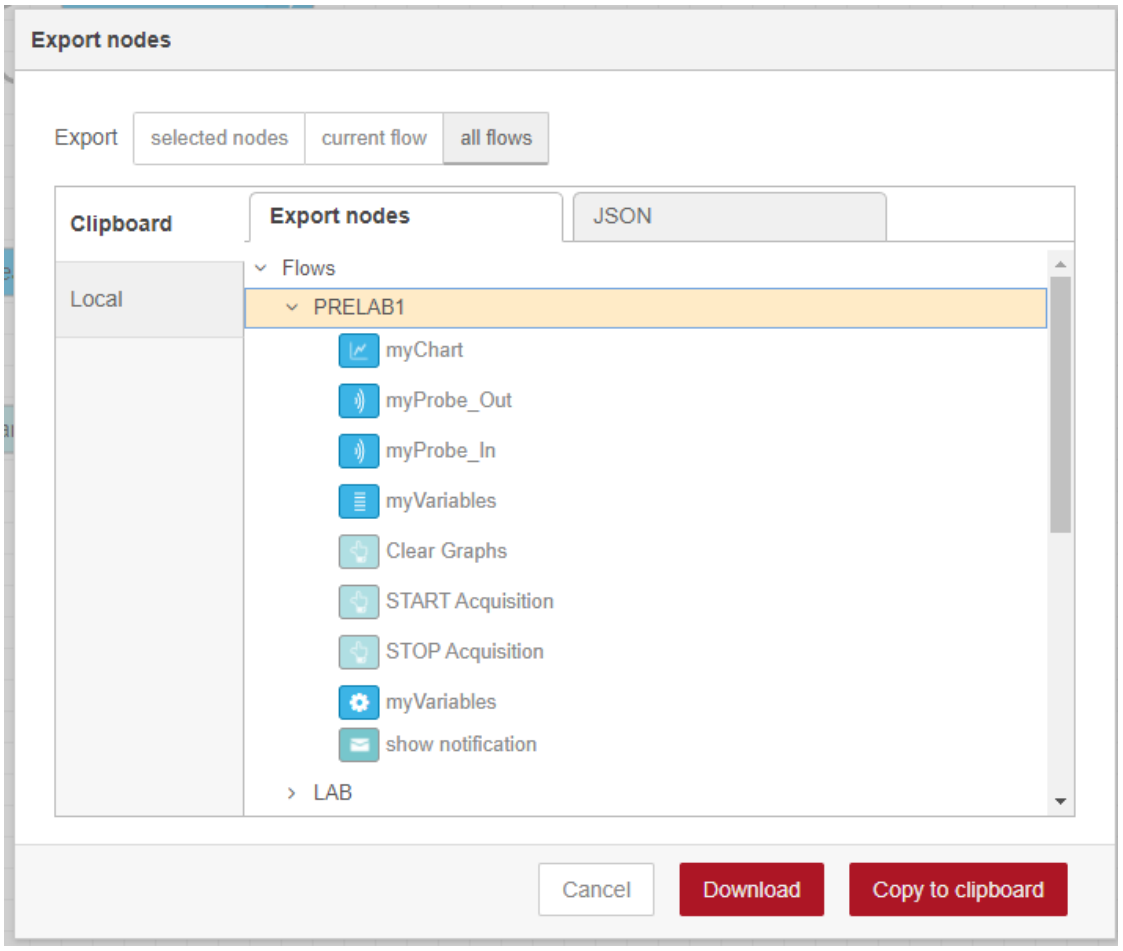
Arrange
Import ctrl-i
Export ctrl-e
Search flows ctrl-f
Configuration nodes ctrl-g c
Flows
Subflows
Groups
Settings ctrl-,
Keyboard shortcuts ⇧?
About STM32CubeMonitor
Help


Export nodes
Export
selected nodes
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PRELAB1
myChart
myProbe_Out
myProbe_In
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START Acquisition
STOP Acquisition
myVariables
show notification
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Download
Copy to clipboard

4) Submission

You will submit one zip file which contains.elf file (STM32CubeIDE) and .json (STM32CubeMonitor)

The naming of the zip file should be:

PRELAB<exp num>_<StudentID>.zip

5) Related Videos

These videos are not directly related to our board but it can help you do the prelab.

STM32CubeIDE:

https://www.youtube.com/watch?v=0p9qzqtlpUc (First 4 minutes)

STM32CubeMonitor:

https://www.youtube.com/watch?v=eIrTYMl7fD0